

Arsenii Ashukha

PhD Candidate at Bayesian Methods Research Group

Student Researcher Samsung AI Center Moscow

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EDUCATION

- PhD in Computer Science, **National Research University Higher School of Economics**, 2017 - 2021
Topic: Applications and understanding of variational inference for modern deep learning, Advisor: Dmitry Vetrov
- MSc in Computer Science, **Moscow Institute of Physics and Technology**, 2017 (with distinction)
Thesis: *Sparsification of DNNs probabilistic framework*, Advisors: Dmitry Vetrov and Alexey Dral
- BSc in Computer Science, **Bauman Moscow State Technical University**, 2015
Thesis: *Bigram anchor words topic modeling*, Advisor: Natalia Loukachevitch

PROFESSIONAL EXPERIENCE

- Research scientist at **Samsung AI Center Moscow** (2018 - Now):
Research on probabilistic deep learning, ensembles of DNNs, uncertainty estimation.
- Research scientist at **Yandex Research & University of Amsterdam** (2017 - 2018):
Research on Bayesian deep learning for a group-level sparsification and uncertainty estimation.
- Research Intern at **Lab of Deep Learning and Bayesian Methods HSE** (2016 - 2017):
Research on Bayesian deep learning for sparsification and incremental learning.

My responsibility included: selecting research directions, scheduling and executing research agenda, development of machine learning models and algorithms, writing papers.

Before I dive into research, I worked as a machine learning engineer at Rambler and Yandex, where I worked on a variety of industrial problems that required creating machine learning models and processing a massive amount of data. Such problems include recommendation systems, advertising systems, and music processing.

PUBLICATIONS

- **Arsenii Ashukha***, Alexander Lyzhov*, Dmitry Molchanov*, Dmitry Vetrov
Pitfalls of In-Domain Uncertainty Estimation and Ensembling in Deep Learning, ICLR (2020).
- Kirill Neklyudov*, Dmitry Molchanov*, **Arsenii Ashukha***, Dmitry Vetrov
Variance Networks: When Expectation Does Not Meet Your Expectations, ICLR (2019).
- Andrei Atanov*, **Arsenii Ashukha***, Kirill Struminsky, Dmitry Vetrov, Max Welling
The Deep Weight Prior, ICLR (2019).
- Andrei Atanov, **Arsenii Ashukha**, Dmitry Molchanov, Kirill Neklyudov, Dmitry Vetrov,
Uncertainty Estimation via Stochastic Batch Normalization, Workshop Track ICLR (2018).
- Kirill Neklyudov, Dmitry Molchanov, **Arsenii Ashukha**, Dmitry Vetrov
Structured Bayesian Pruning via Log-Normal Multiplicative Noise, NeurIPS (2017).
- Dmitry Molchanov*, **Arsenii Ashukha***, Dmitry Vetrov
Variational Dropout Sparsifies Deep Neural Networks ICML (2017).

Full list: scholar.google.com/citations?user=IU-kuP8AAAAJ. *equal contribution.

MISCELLANEOUS

- **Reviewing:**

- Conferences:
 - International Conference on Machine Learning, ICML (2019, 2020)
 - Neural Information Processing Systems, NeurIPS 2019 (top-50% highest-scoring reviewers)
 - International Conference on Learning Representations, ICLR 2020
- Workshops:
 - ICML Workshop on Invertible Neural Networks (2019, invertibleworkshop.github.io)
 - Bayesian Deep Learning Workshop (since 2017, bayesiandeeplearning.org)

- **Thesis (co-)supervision:**

- Alexander Lyzhov
 - Deep Neural Network Ensembles: Analysis and Approaches to Diversification (MSc, 2020)
- Andrei Atanov
 - Effective Learning of Deep Neural Networks Ensembles (BSc, 2018)
 - Learning Deep Models with Small Data (MSc, 2020)
- Evgenii Nikishin (MSc, 2019)
 - Stability Improvement and Knowledge Transfer in Deep Reinforcement Learning (MSc, 2019)

- **Teaching:**

- Supervisor of scientific seminars on machine learning at HSE and Yandex (since 2017)
- TA at **DeepBayes** Summer School on Bayesian Deep Learning (since 2017), <http://deepbayes.ru>
- Machine Learning at MIPT: TA (2016), Lecturer and manager (2017, 2018)

- **Open-source contributions:** See <https://github.com/senya-ashukha>.

- Extremely simple implementations of ML algorithms that I made just for fun:
 - Gradient boosting, <https://github.com/senya-ashukha/simple-boosting>
 - Density estimation using Real NVP, <https://github.com/senya-ashukha/real-nvp-pytorch>
 - Quantile Regression DQN, <https://github.com/senya-ashukha/quantile-regression-dqn-pytorch>

- **Languages and Keywords:** I'm fluent with Python which is my love, I use to code on C, Go, language is not a problem after all. I'm also fluent with common libs such as NumPy, Matplotlib, scikit-learn, etc. My primary deep learning framework at the moment is PyTorch which is my absolute love, prior to that I had a decent experience with Theano+Lagange and TensorFlow.

- **Foundations are crucial:** While I was MSc student I learned many fundamentals of machine learning and algorithms at Yandex School of Data Analysis (YSDA) e.g., Machine Learning, Bayesian Machine Learning, Optimization in Machine Learning, Deep Learning, and Graphical Models.